

Claims

- [c1] 1. An edge module for a modular plastic conveyor belt, the edge module comprising:
- a retention member defining a slide axis and including:
 - a guide surface; and
 - a rod-contacting face oblique to the slide axis;
 - a module body extending longitudinally from a first end to a second end, laterally from an inside edge to an outside edge, and in thickness from a top side to a bottom side, the module body including:
 - a first set of hinge eyes spaced apart along the first end and forming rod holes aligned laterally to define a first rod passageway;
 - a second set of hinge eyes spaced apart along the second end and forming rod holes aligned laterally to define a second rod passageway;
 - outside edge structure defining a chamber near the outside edge of the module body intersecting the first rod passageway and extending in a slide direction to a far end for receiving the retention

member with the slide axis extending in the slide direction and with the rod-contacting face obliquely facing the outside edge of the module body, the outside edge structure including:

a guide formed along the chamber and engaging the guide surface of the retention member to guide the retention member in the slide direction along the chamber in sliding contact between a first position in which the retention member at least partly occluding the first rod passageway and a second position in which the first rod passageway is unoccluded;

biasing means residing in the chamber and urging the retention member toward the first position;

wherein the end of a rod being inserted laterally from the outside edge of a belt including the edge module slidingly bears against the oblique rod-contacting face of the retention member, forcing the retention member to slide in the slide direction along the chamber against the biasing means to the second position until the retention member clears the first rod passageway and the rod slides off the rod-contacting face into the unoccluded first rod pas-

sageway.

- [c2] 2. An edge module as in claim 1 wherein the biasing means comprises a coil spring.
- [c3] 3. An edge module as in claim 1 wherein the biasing means is disposed in the chamber between the far end and the retention member.
- [c4] 4. An edge module as in claim 3 wherein the coil spring is a metal spring and wherein the outside edge structure of the module body includes a stub extending from the far end of the chamber and around which one end of the coil spring is encircled, the other end of the coil spring contacting the retention member.
- [c5] 5. An edge module as in claim 3 wherein the coil spring is a metal spring and wherein the retention member includes a stub at one end around which one end of the coil spring is encircled, the other end of the coil spring contacting the far end of the chamber.
- [c6] 6. An edge module as in claim 1 wherein the biasing means comprises a spring unitarily molded with the module body.
- [c7] 7. An edge module as in claim 1 wherein the biasing means comprises a spring unitarily molded with the re-

tion member.

- [c8] 8. An edge module as in claim 6 wherein the spring comprises a flap extending obliquely into the chamber from a side wall of the chamber.
- [c9] 9. An edge module as in claim 6 wherein the spring comprises a pair of opposing flaps extending at first attached ends from opposite sides of the chamber proximate the first end of the module obliquely into the chamber toward the far end to second free ends forming a V-shaped structure open at its vertex, the flaps each including a rib extending in the thickness direction of the module body and positioned facing the corresponding rib on the other flap, and wherein the retention member includes a head and a neck at an end opposite the rod-contacting face and sides angling outward from the neck toward the rod-contacting face, wherein the head of the retention member is larger in diameter than the spacing between the ribs and resides between the pair of flaps between the ribs and the open vertex between the first position in which the ribs nestle in the neck and the second position in which the head of the retention member resides nearer the open vertex and pushes against the flaps to separate them further.
- [c10] 10. An edge module as in claim 1 wherein the rod-

contacting face of the retention member defines a planar surface.

- [c11] 11. An edge module as in claim 1 wherein the guide in the outer edge structure defines a convex surface and wherein the guide surface of the retention member defines a concave surface that slidably receives the convex surface of the guide.
- [c12] 12. An edge module as in claim 1 wherein the guide in the outer edge structure comprises a ridge and the guide surface of the retention member defines a groove receiving the ridge.
- [c13] 13. An edge module as in claim 1 wherein the outer edge structure includes a pair of guides spaced apart laterally across the chamber and wherein the retention member includes a pair of guide surfaces defining sides of the retention member on opposite sides of the slide axis.
- [c14] 14. An edge module as in claim 1 wherein the guide in the outer edge structure of the module body extends from the first end of the module body to the far end of the chamber.
- [c15] 15. An edge module as in claim 1 wherein the retention member comprises first and second opposite sides bridged at one end by the rod-contacting face and

wherein the first side is shorter than the second side in the direction of the slide axis.

- [c16] 16. An edge module as in claim 1 wherein the retention member further includes means for manually retracting the retention member from the first position to the second position.
- [c17] 17. An edge module as in claim 15 wherein the means for manually retracting comprises an indentation in the retention member accessible from the top or bottom side of the edge module.
- [c18] 18. An edge module as in claim 1 wherein the slide direction is perpendicular to the first rod passageway.
- [c19] 19. A modular plastic conveyor belt comprising a series of rows of plastic belt modules including edge modules as in claim 1 interconnected by hinge rods residing in the first and second rod passageways between consecutive rows.
- [c20] 20. An edge module for a modular plastic conveyor belt, the edge module comprising:
 - a module body extending longitudinally from a first end to a second end, laterally from an inside edge to an outside edge, and in thickness from a top side to a bottom side, the module body including:

a first set of hinge eyes spaced apart along the first end and forming rod holes aligned laterally to define a first rod passageway;

a second set of hinge eyes spaced apart along the second end and forming rod holes aligned laterally to define a second rod passageway;

outside edge structure forming a chamber near the outside edge of the module body intersecting the first rod passageway and extending to a closed far end;

a retention member slidably received in the chamber in the outside edge structure; and

a spring extending between the far end of the chamber and the retention member to urge the retention member toward the first end of the module body and into a position at least partly occluding the first rod passageway.

- [c21] 21. An edge module as in claim 19 wherein the spring is a metal coil spring.
- [c22] 22. An edge module as in claim 20 wherein an end of the metal coil spring is attached to a stub formed on an end of the retention member.
- [c23] 23. An edge module as in claim 19 wherein the outside

edge structure of the module body further includes a stub extending from the far end of the chamber and to which one end of the spring is connected, the other end of the spring contacting the retention member.

- [c24] 24. An edge module for a modular plastic conveyor belt, the edge module comprising:

a module body extending longitudinally from a first end to a second end, laterally from an inside edge to an outside edge, and in thickness from a top side to a bottom side, the module body including:

a first set of hinge eyes spaced apart along the first end and forming rod holes aligned laterally to define a first rod passageway;

a second set of hinge eyes spaced apart along the second end and forming rod holes aligned laterally to define a second rod passageway;

outside edge structure defining a chamber near the outside edge of the module body intersecting the first rod passageway and extending in a slide direction to a far end;

a retention member slidably received in the chamber and including:

a rod-contacting face at the end of the retention member nearer the first end of the module body,

wherein the rod-contacting face is oblique to the first rod passageway and to the slide direction.

- [c25] 25. An edge module as in claim 23 further comprising biasing means disposed in the chamber for urging the retention member toward the first end of the module body.
- [c26] 26. An edge module as in claim 23 wherein the retention member further includes a first side and an opposite second side bridged at one end by the rod-contacting face, wherein the first side is longer than the second side.
- [c27] 27. An edge module as in claim 23 wherein the retention member further includes opposite top and bottom sides generally trapezoidal in profile.
- [c28] 28. An edge module as in claim 23 wherein the rod-contacting face of the retention member is flat.
- [c29] 29. An edge module as in claim 23 wherein the retention member further includes a pair of opposite guide surfaces and the outside edge structure of the module body includes a pair of guides formed along opposite side walls of the chamber and that cooperate with the guide surfaces of the retention member in sliding contact.

- [c30] 30. An edge module as in claim 28 wherein the guide surfaces are concave and the guides are convex.
- [c31] 31. An edge module as in claim 23 wherein the slide direction is perpendicular to the first rod passageway.
- [c32] 32. An edge module as in claim 23 wherein the retention member further includes means for manually retracting the retention member from the first position to the second position.
- [c33] 33. An edge module as in claim 31 wherein the means for manually retracting comprises an indentation in the retention member accessible from the top or bottom side of the edge module.
- [c34] 34. An edge module for a modular plastic conveyor belt, the edge module comprising:
 - a module body extending longitudinally from a first end to a second end, laterally from an inside edge to an outside edge, and in thickness from a top side to a bottom side, the module body including:
 - a first set of hinge eyes spaced apart along the first end and forming rod holes aligned laterally to define a first rod passageway;
 - a second set of hinge eyes spaced apart along the second end and forming rod holes aligned laterally

to define a second rod passageway;
outside edge structure forming a chamber near the
outside edge of the module body intersecting the
first rod passageway and extending to a far end;
a retention member received in the chamber in the
outside edge structure and slidable between a closed
position at least partly occluding the first rod pas-
sageway and an open position clear of the first rod
passageway; and
biasing means urging the retention member toward
the closed position.